

THE PRESERVATION OF THE NATIVE FAUNA AND FLORA IN AUSTRALASIA.

WE are glad to see that the New Zealand Government is actively continuing the work of preserving the natural scenery of the dominion to which we directed attention last year. Some interesting particulars are given in the Report on Scenery Preservation for the year 1907-8 lately issued by the Department of Lands, from which it is evident that the authorities fully appreciate the value of the remarkable natural attractions for which the Dominion is so justly famous. During the year under review an addition of more than 8000 acres was made to the area reserved under the Scenery Preservation and Public Works Acts. This area now reaches a total of about 34,000 acres, exclusive of 100,000 acres of Crown land similarly reserved under the Land Act.

The public of New Zealand appears to be as much interested in the good work as the Government, considerable sums having been raised by subscription for the purchase of special areas in the neighbourhood of some of the large towns. Let us hope that they will not forget to reserve a sufficient belt along the coast-line, so that future generations may be protected from attempts on the part of grasping landlords to prevent the public from making full use of the seashore, such as have lately given rise to so much dissatisfaction in our own country.

The proper care of the areas reserved appears to be a matter of no little trouble and expense. Where they are covered with forest there is the constantly recurring danger of bush-fires and damage by stock. As the inspector of scenic reserves remarks in his report, swaggers and Maoris appear to set fire to the country as if they were inspired by a spirit of destruction, and settlers, in clearing their own lands, are indifferent to the damage their fires may cause by spreading on to the lands of the Crown.

One of the most beneficial results of the reservation of these large areas of native bush is seen in the preservation from destruction of the native birds. We quote again from the subsidiary report of Mr. E. Phillips Turner, the inspector of scenic reserves:—

"In the Canterbury reserves I found that the native birds (with the exception of the tui, which in Akaroa is still fairly plentiful) are getting very scarce. In Otago the larger size of the reserves has served as a more effectual sanctuary, and tuis, bell-birds, and tomtits were fairly plentiful, whilst fantails, robins, wrens, parrakeets, kakas, and pigeons were also seen."

The author of the main report is, we think, rather unnecessarily severe upon the New Zealand botanists. After very properly directing attention to "the interesting and valuable report on a botanical survey of the Tongariro National Park, by Dr. Cockayne," he observes:—

"Nowhere in the world are such beautiful and rare plants and trees to be found as in New Zealand, and the time is not far distant when this will be widely recognised, and visitors from abroad will undertake what our own students have overlooked."

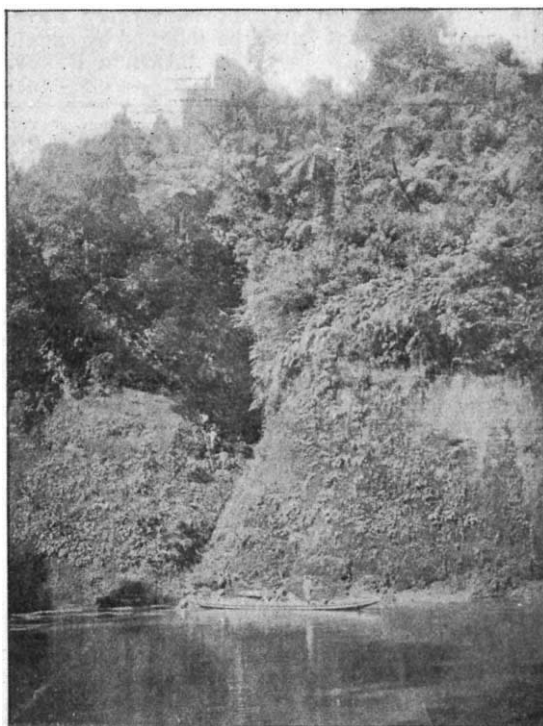
It is only a few months since we had occasion to notice an extremely interesting and beautifully illustrated work on the New Zealand flora by two local botanists,¹ and it seems to us that a surprising amount of good work of this kind has been done by New Zealand students; witness the valuable publications of the New Zealand Institute during the past thirty or forty years. There are not many people in New Zealand who can afford to devote their lives to such work gratuitously, but we have little doubt that if the New Zealand Government extended to local

¹ Laing and Blackwell, "Plants of New Zealand."

naturalists sufficient encouragement, there would be no lack of competent investigators eager to enter the field. If the "visitors from abroad" are able to undertake the work, it is largely on account of the generous assistance and encouragement which they receive both from the authorities in their own country and those in New Zealand.

The report is again copiously illustrated by photographs of some of the more remarkable scenery, one of which, taken on the Wanganui River, we reproduce. This river is said to have "no equal in the world as regards its botanical and scenic attractions," and the photographs certainly go a long way to support the claim.

Two reports by Dr. Cockayne, lately published by the New Zealand Department of Lands, have also reached us, the one referred to above as a botanical survey of the Tongariro National Park, and the other as a botanical survey of the Waiporā Kauri Forest. These are also copiously illustrated by excellent photo-



Wanganui River Scenery—Mangaro, sixty-six miles from Wanganui.

graphs, and should prove of great interest to botanists all over the world. The report on the Tongariro National Park contains an extremely interesting chapter on the geology of this remarkable volcanic district, by Mr. R. Speight. The photograph of the summit of Mount Ruapehu, showing a hot and sometimes boiling lake surrounded by ice-cliffs, is particularly striking.

We further observe with much satisfaction that the various societies interested in natural history in the Commonwealth of Australia are making a vigorous and combined effort to arouse the Federal Government to a full sense of its responsibilities with regard to the preservation of the native fauna. The movement which has lately taken place in England in relation to the protection of birds, and which culminated in Lord Avebury's Bill, appears to be largely responsible for the renewed interest which is being

taken in these matters in Australia. The Royal Societies of South Australia and New South Wales, the advisory committee *re* Fisheries and Game Acts in Victoria, and the Linnean, Zoological, and Animals' Protection Societies of New South Wales are all taking an active part in furthering the good cause. An influential deputation, headed by Prof. W. Baldwin Spencer, F.R.S., has already waited upon the Prime Minister of the Commonwealth, on August 4, in regard to the prohibition of the exportation of the skins and plumes of Australian birds, and was most favourably received. It must not be supposed, of course, that nothing has already been done to secure the preservation of the native fauna of Australia; this is by no means the case. Some of the most interesting animals, such as the platypus and the lyre bird, have, we believe, been more or less protected for a long time, but it is felt, and rightly, that existing legislation is not sufficient, and that if the native fauna is not to disappear in the near future, much more vigorous action must be taken. We wish the new movement in this direction every success, and cannot doubt that it will be followed by excellent results.

ARTHUR DENDY.

PROF. WILLIAM EDWARD AYRTON, F.R.S.

ON Sunday, November 8, Prof. Ayrton died at the age of sixty-one. During the last four years he was in danger on account of excessive blood-pressure. The immediate cause of death was influenza, followed by bronchitis and heart failure.

He was the son of an able barrister and the nephew of the Rt. Hon. Acton Ayrton, a Minister in Gladstone's Government from 1869 to 1874. I have before me the history of the Ayrton family for the last three hundred years, a family of able lawyers, musicians, surgeons, clergymen, university dons, and schoolmasters. He went to University College School, London, where he gained numerous prizes; at University College he gained the Andrews exhibition in 1865 and the Andrews scholarship in 1866. He passed the first B.A. examination with honours, and then became a pupil of Lord Kelvin in preparation for the Indian Telegraph Service. His eulogistic account of how Lord Kelvin dealt with his students, published in the *Times* about the beginning of this year, was greatly praised in *NATURE* a short time ago. In style and force it will compare favourably with anything written in the English language. He was not only a fine writer, he was also a brilliant speaker. He seldom needed notes in speaking. Twenty years ago, at the Paris Exhibition, he gave a long lecture in French, using no notes, and French critics described it as being nearly perfect in style and enunciation. In India he did good work with the late Mr. Schwendler, and became electrical superintendent of the Telegraph Department. In 1872-3 he was on special duty in England, and acted also for Lord Kelvin and Prof. Jenkin, the engineers of the Great Western Telegraph Cable. From 1873 to 1878 he was professor of natural philosophy and instructor in telegraphy in the Imperial College of Engineering, Tokio, Japan.

I gave a short account of Ayrton's Japanese laboratory in a paper read before the Society of Arts in January, 1880. I venture to think that nobody interested in the history of scientific education can afford to neglect that paper. It describes the educational ideas which had gradually been developed in Japan. At Glasgow and Cambridge and Berlin there were three great personalities, but, except for these, the laboratories of Kelvin, of Maxwell, and of

Helmholtz were not to be mentioned in comparison with that of Ayrton. When I went to Japan in 1875, what I found were fine buildings, splendid apparatus, carefully chosen and often designed by himself, and earnest, diligent students; I found also a never-resting, energetic, keen-eyed chief of great originality and individuality. It is no wonder that Maxwell jestingly said that the electrical centre of gravity had shifted towards Japan. It must be remembered that at that time there were not half-a-dozen people in Great Britain who had experimented in electricity.

Before 1875 he had published papers on telegraphy; after 1875 his investigations were mainly on electrical phenomena, sometimes without, but oftener with, a practical bearing on engineering.

From 1879 to 1884 Ayrton was professor of applied physics at the City and Guilds Technical College, Finsbury. It may already be forgotten that the system of instruction created there was radically different from anything which previously existed. It is now to be found in every technical college of this country. Students learnt by actually doing things in the laboratories and workshops. The most important thing leading to success was that there were no outside examiners. Hitherto professors had merely shown experiments at the lecture table. In one or two mechanical laboratories a few students looked on whilst the professor broke specimens with a 200-ton testing-machine or made tests on a steam engine. Only a few volunteer students had a chance of making experiments in physics anywhere. Ayrton gave interesting work to all students, and induced them to think things out for themselves. The motors and dynamos and other contrivances which were tested were not so small as to be toys, and they were not so large but that they could be left in charge of the average student without fear of disaster. The preliminary work was particularly Ayrton's invention, and as to this his book on *Practical Electricity* ought to be consulted. He said:—in the study of mechanics and other parts of science we deal with weight, inertia, stress, colour, &c., and a boy's senses have made such things tangible. But in electricity we deal with something almost abstract, and there must be a regular training which will make the things which we call current and voltage and resistance and magnetic induction just as tangible to the student as weight is.

Again, Ayrton never tried to create the perfect engineer. He aimed at creating a learner, a person with developed common sense, a man who would learn engineering when he had the chance of practice, a man whose education would go on until he died, a man who could use books, a man fond of reading. It is difficult now to say how much of his system is due to colleagues like Armstrong and myself. We had the same ideas, we never quarrelled, we never seemed to differ in opinion; on any given question we seemed always to come to the same conclusions. No mere chemist taught chemistry, no mere mathematician taught mathematics, no mere physicist taught physics, no mere specialist taught anything at that college. Practical and descriptive geometry and graphics were taught, and almost no deductive geometry or geometrical conics. Ninety per cent. of the usual work in algebra and trigonometry was put aside as unnecessary trickery. Analytical conic sections gave place to the calculus study of curves in general. Before 1879 squared paper was expensive; in 1879 Ayrton arranged that it could be bought at sixpence a quire. Every subject was taught through the other subjects. I am afraid that the average student would have failed to pass any outside examination in any of the subjects, but he had a wonderful power of using on any new